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ABSTRACT

This paper examines the Taiwanese government's ways of constructing a measurement model and an empirical study of digital divide among government agencies. On the basis of Gowin's Vee structure, this paper first refers to the Grounded Theory in the establishment of the draft list for the measurement of the digital divide in local governments. Furthermore, it constructs five dimensions and 42 measurement factors with an expert questionnaire and the Analytic Hierarchy Process (AHP) for the digital divide evaluation model of government agencies. Finally, this paper measures the actual levels of digital divide in local governments, with the digital divide evaluation model in examining the degrees of digitalization, pros, and cons in association with digital divide. It is hoped that the results would serve as a reference for government agencies of all levels in formulating their digitalization strategies.

Keywords

Digital governments, digital divide evaluation model, grounded theory, expert questionnaire, analytic hierarchy process.

INTRODUCTION

The U.S. government took the lead in emphasizing Information Technology. The Clinton government proposed the National Information Infrastructure: Agenda for Action by listing the establishment of Information Superhighway as its policy guideline and investing US$400 billion in the building of its national information infrastructure (Dalton, 2000). The strong emphasis placed by the U.S. government on the deployment of national information structure has made all other developed countries follow suit. In 1998, the Canadian government came up with "Connecting Canadians", a vision for digitalization. In the following year, it also came up with the Government On-Line (GOL) as another initiative. In 2001, the Japanese government began "E-Japan" and the E-Japan strategies. In 2002, the Australian government developed the Federal E-Government Strategy, aiming to provide "Better Services, Better Government" (National Information and Communication Initiative Committee, 2004). As a response to the global trends and efforts in enhancing overall competitiveness, Taiwan is currently driving the 4th stage Ubiquitous Network Government Program on the basis of its ten flagship projects. This digitalization program hinges on the integration and connections of the central government, county/city governments, and municipal city governments. The vision sees the provision of active services, the creation of a quality life, the prevalence of information services, the enhancement of social concerns, the upgrade of network interactions, and the encouragement of citizens' participation so as to construct innovative, integrated, and value-added services to serve the society (National Research Development and Evaluation Commission, 2007).

Generally speaking, the e-government system consists of hardware, software, information, processing procedures, and personnel. The system structure was established to meet the purposes of uses with interests (Zarei and Ghapanchi, 2008). E-governments are a service platform that link companies with government agencies so as to complete businesses and transactions (Sprecher, 2000). For governments, digitalization reduces risks, operational costs and time, encouraging the participation of citizens, therefore improving their service quality (Metaxiotis and Psarras, 2005). Ebrahim and Irani (2005)

propose various elements for the construction of e-governments (including relevant applications, infrastructures, corporate models, and standards), as well as service targets (such as government agencies and other users). However, the feedback of the abovementioned studies is often advantageous to the central governments and is not necessarily of the same benefit to the local governments. Meanwhile, in the process of government digitalization, the differences in the opportunities in technology applications and digital infrastructures often result in digital divide among governments, and such differences have always been in existent in the development of e-governments (Norris, Bennett, and Entman, 2001).

As a rule of thumb, the digital divide in governments leads to unequal opportunities for the public to access information technology, and leads to the uneven distribution of social resources and opportunities in creating wealth or even widening the gaps between social classes (National Research Development and Evaluation Commission, 2006). Moreover, the different aspects in politics, economics, and education are also subject to the influence of digital divide (Brooks, Donovan, and Rumble, 2005; Cuervo and Menéndez, 2006; Fuchs and Horak, 2008). Therefore, when driving the integration of government digitalization, the first task should be the examination of the levels of digital divide among local county/city governments so as to identify the main gap in such divide. This is the only way for the competent authority to ensure a correct set of policies in narrowing the digital divide. In other words, the provision of effective measurements for digital divide will reduce it. However, the measurements and indicators under the current evaluation structure often differ owing to various dimensions and assessment targets (Bui, Sankaran, and Sebastian, 2003). Therefore, in the process of digitalization, governments should take a long-term and holistic approach (Metaxiotis and Psarras, 2005). Considering the relative lack of studies on digital divide in local governments and an absence of a complete set of measurements and robust models in evaluating such digital divide, this paper sets out its research purposes as follows:

- Exploration of the digitalization of governments around the world and their relevant measures and models for the evaluation of digital divide;
- Construction of a model to objectively evaluate digital divide in local governments;
- Empirical study by utilizing the evaluation model developed in this paper to assess digital divide in local governments.

LITERATURE REVIEW

The concept of digital divide evolves along with the emergence of new technologies. In a report by the Organization for Economic Cooperation and Development (OECD), Understanding Digital Divide, digital divide is defined as "the gap in opportunities for individuals, households or companies of different social and economic backgrounds and geographies in accessing ICT (Information and Communications Technologies) and activities on the Internet" (OECD, 2001). However, owing to the growing popularity of the Internet and the ensuing transformations of economic activities across the board, digital divide becomes an increasingly important issue (Rao, 2005). The National Research Development and Evaluation Commission (2006) indicates that the "free" flow of information facilitates the creation and utilization of the value-added so the distribution of scarce resources will be more even and the information utilization more efficient. In the end, the competitiveness of the society and the country will be enhanced and public benefits will be improved. The prevalence of the Internet is able to eliminate unfair phenomena in the society, leading to better social interests. However, digital divide fails to eliminate social injustice and triggers new class oppositions, mainly because the fewer the opportunities to access digital technologies, the fewer the opportunities to utilize information technology, hence, the loss of the opportunities to create wealth. Digital divide leads to inequality in the use of social resources and as a result, the gap between social classes widens. Therefore, the impact of digital divide covers all aspects in politics, economics, and the society of the whole country. Politically, the Third World countries experience deterioration and corruption of governments caused by the differences in resources owned as a result of digital divide. Economically, this leads to the popularity of trade tariffs, protectionism, a lack of investment opportunities, placing these countries at a disadvantage against developed countries because they will be used and exploited by advanced countries (Fuchs and Horak, 2008). The economic implications of digital divide are global as they affect the participation by all people. Socially speaking, digital divide obstructs the development of humans as a species and the improvement of the quality of life (Cuervo and Menéndez, 2006). In education, digital divide affects the ways of communications and work efficiency of students (Brooks et al., 2005). To sum up, the impact of digital divide is inward going outward, extending from the internals of a nation to the competitive advantages of the global arena. With the constant development of ICT and the Internet, it is increasingly imperative to resolve the digital divide issue.

The accurate measurement of digital divide helps to identify the main reasons for its existence and serves as a reference for the competent authority in resolving it. Luyt (2006) points out that the indicators to the readiness of digitalization are the measurement tool of evaluating digital divide. Table 1 shows that the evaluation dimensions and indicators to digital readiness often differ for various research objects. The research objects can be as wide as countries (cross-country comparisons) and as small as a single industry or corporation. Bui et al. (2003) even suggest that among the current various

structures in assessing the readiness of national digitalization, the predetermination of indications is all different. For example, Computer Systems Policy Project (2003) constructs a model to measure digitalization readiness with a focus on digital infrastructures. Meanwhile, many measurement structures take into account human resource factors such as technical personnel and knowledge of users (Bui et al., 2003; McConnell International and WITSA, 2000; Mutula and van Brakel, 2006). Other external factors, such as laws, policies, cultures, and macro economies are also incorporated as indicators to digital readiness (Economist Intelligence Unit, 2007; Bui et al., 2003; United Nations Conference on Trade and Development, 2003; Center for International Development at Harvard University, 2000; Mutula and van Brakel, 2006). Among the various structures, the one proposed by Mutula and van Brakel (2006) covers a wider range of constructs including ICT infrastructure readiness, human resources readiness, external environment readiness, enterprise readiness, and information readiness.

	A	B	C	D	E	F	G	H	I
Connectivity and technology infrastructure	●	●	●	●	●	●	●	●	●
ICT infrastructure readiness	●	●	●			●			●
Consumer and business adoption	●			●	●			●	●
Legal and policy environment	●			●			●		●
Social and cultural infrastructure	●		●				●		●
Government policy and vision	●								●
Knowledgeable citizens			●					●	●
Access to skilled workforce		●	●			●		●	●
Macro economy			●						●
Industry competitiveness			●						
Ability and willingness to invest			●						●
Information security and management								●	●
Source: A: Economist Intelligence Unit (2007); B: Ruikar and Carrillo (2006); C: Bui et al. (2003); D: United Nations Conference on Trade and Development (2003); E: Computer Systems Policy Project (2003); F: Wolcott, Mchenry, Goodman, and Foster. (2001); G: Center for International Development at Harvard University (2000); H: McConnell International and WITSA (2000); I: Mutula and van Brakel (2006)									

Table 1. Summary of Measurements for Digital Readiness

RESEARCH METHOD AND DESIGN

This paper applies the structure of Gowin's Vee model in systematically constructing a digital divide evaluation model for local governments and conducting an empirical study accordingly. The Gowin's Vee model has a V-shaped structure, one side of the V being the literature end and the other side being the empirical end. Researchers are able to obtain the concepts of problem solving on the basis of their understanding of the topics through the literature review and consolidation. Afterwards, they derive in-depth knowledge regarding the topics with their judgment and the interpretation of the collated data and the experimental results (Novak and Gowin, 1989). First of all, due to construct the digital divide evaluation model of local government, this paper refers to the Ground Theory on the literature front in the construction of the draft list for the measurement items of the digital divide in local governments in Taiwan. Secondly, on the empirical study front, this paper resorts to experts' questionnaires in gathering the feedback from relevant personnel at governments and applying the Analytic Hierarchy Process (AHP) in calculating the weightings of individual measurement items so as to establish the digital divide evaluation model for local governments in Taiwan. Finally, in order to valid this evaluation model to adopt in the real world, this paper uses case studies (a local government in Taiwan) to assess the digital situation and to gain an understanding of digital divide in this case. Figure 1 illustrates the research flows of this paper.

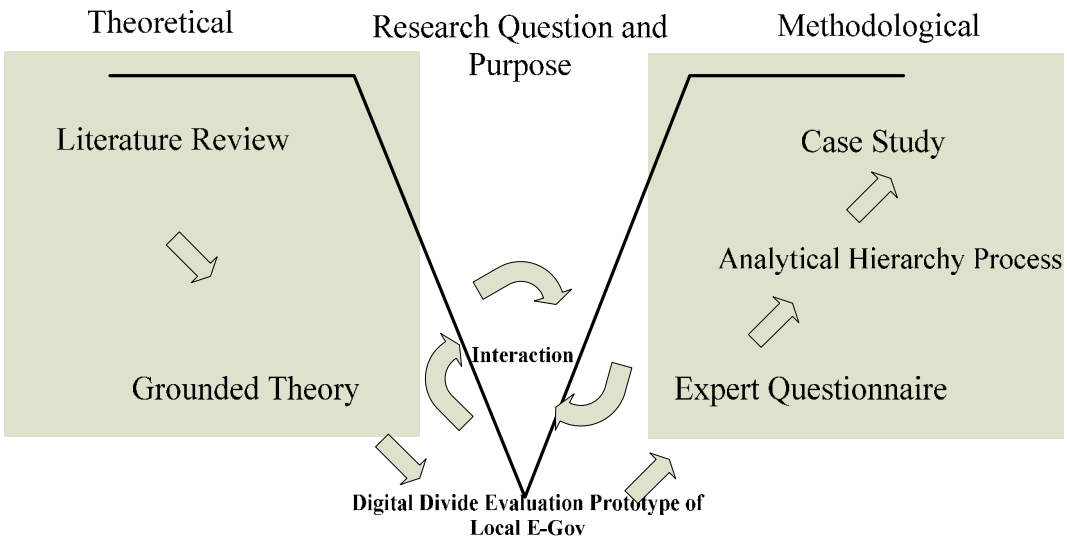

Figure 1. Research Flowchart

CONSTRUCTION OF PROTOTYPE DIGITAL DIVIDE EVALUATION MODEL

Strauss and Corbin (1990) believe that the Ground Theory is a systematic approach in data collation and analysis - digging, developing, and temporary validation. As the purpose of this paper is to construct a model to evaluate digital divides in local governments, the key words this paper uses in the collation of documents on the literature end are "digital divide", "digital gap", "e-readiness", "e-ready", "e-government", "e-gov" and "local-government". Meanwhile, as e-government is a relatively new subject, this paper mainly selects the articles published after 2000. By sourcing from the Science Direct, a database, for relevant literature and eliminating the papers not associated with the research topics, this paper finds a total of 23 papers as summarized in Appendix A. Secondly, by following the methods proposed by the Ground Theory, this paper comes up with 301 conceptualized results from the process of open coding. Further, this paper integrates the coded items of the same concepts. By following the same method, this paper summarizes the 301 concepts into 49 domains.

Finally, Luyt (2006) indicates that e-readiness can be used in measuring digital divide. Therefore, this paper refers to the five dimensions of e-readiness proposed by Mutula and van Brakel (2006), namely, ICT infrastructure readiness, human resources readiness, external environment readiness, enterprise readiness, and information readiness, to further classify the 49 domains of coded entries into these five dimensions, developing the prototype architecture of the digital divide evaluation accordingly. Figure 2 illustrates the framework of this measurement model.

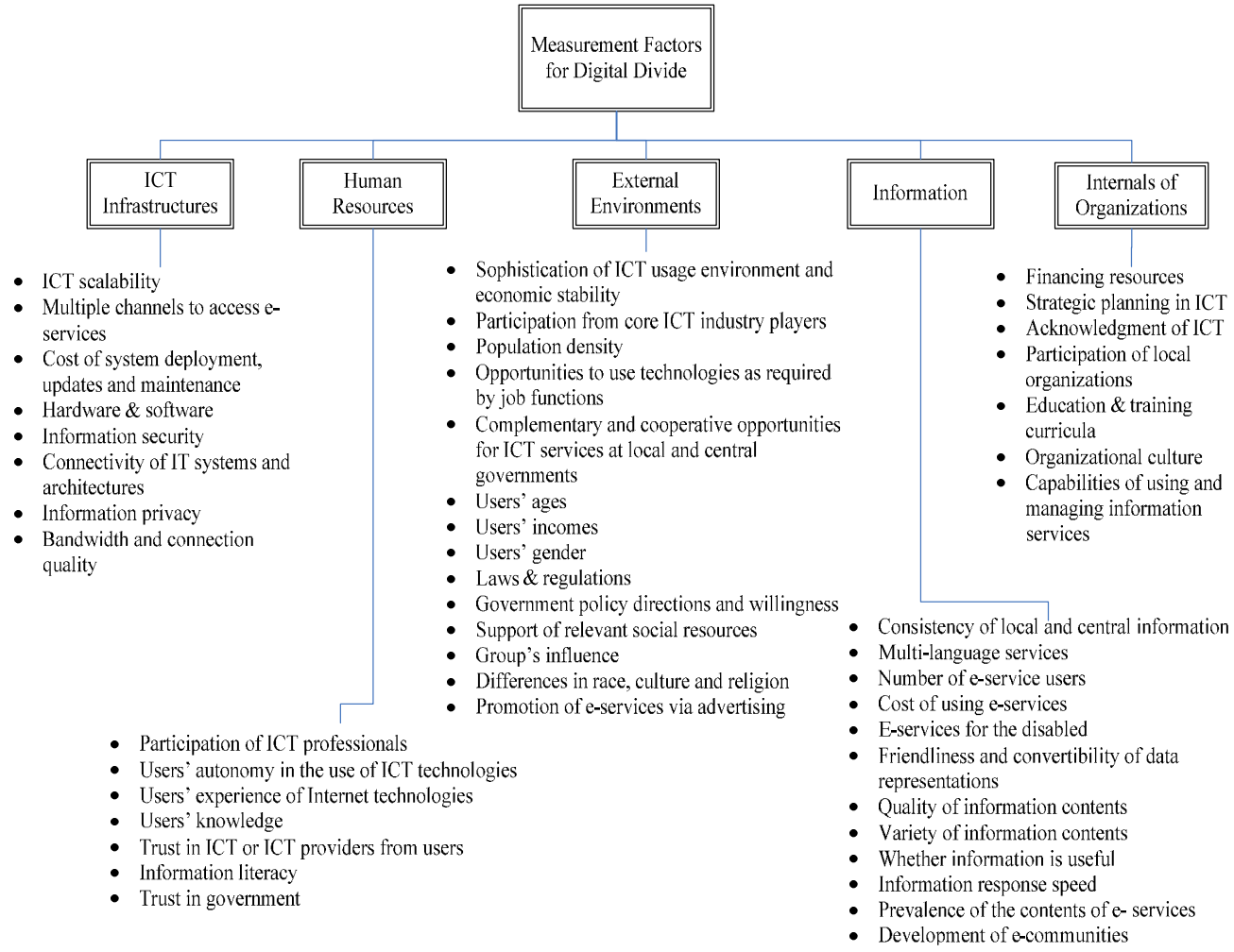

Figure 2. Structure of Digital Divide Measurements

CORRECTION AND WEIGHTING ALLOCATIONS OF DIGITAL DIVIDE EVALUATION FOR GOVERNMENT

Methods and Results of Experts' Questionnaire Survey

This paper establishes five dimensions and 49 domains for the digital divide evaluation model by following the process prescribed in the Ground Theory. In order to ensure and enhance the content validity of individual dimensions and items, as well as to remedy the insufficiency of literature and meet it with practical needs, this paper follows the research methodology and validation process proposed by Lawshe (1975) and conducts an experts' questionnaire survey to confirm the suitability of the structure of digital divide evaluation model for local governments. These experts come from the industries, governments, and academic communities. There are a total of nine experts.

As there are nine experts in this study, the Content Validity Ratio (CVR) should be greater than 0.685 in order to be selected (Lawshe, 1975). This paper eliminates a total of seven items whose CVR values do not meet the criteria. The seven items eliminated are "number of PC users", "population density", "users' gender", "laws and regulations", "group influence", "differences in race, culture, and religion", and "acknowledgment of ICT by organizations". As a result, the remaining 42 items are considered by experts to be the measurements suitable for the assessment of digital divide in local governments.

Analytic Hierarchy Process (AHP)

After the processes pursuant to the Ground Theory and the release of the experts' questionnaires, this paper comes up with the measurement items for the digital divide in local governments. In order to determine the relative weightings of the individual items, this paper designs a hierarchical structure of questions for the AHP questionnaires based on the above derived measurement dimensions and items.

After recovering the AHP questionnaires, this paper ensures the consistency of paired questions answered by the respondents with consistency tests. This paper sets Consistency Ratio (C.R.) <0.1 as the maximum acceptable error (Saaty, 1971). If the C.R.<0.1, it is deemed a valid questionnaire. On the other hand, if the C.R. >=0.1, it is deemed an invalid questionnaire. A total of five questionnaires passed the consistency tests. Therefore, this paper performs the AHP analysis on these five valid questionnaires in order to calculate the overall and local weightings of their respective factors.

As shown in Table 2, among the five dimensions for e-readiness proposed by Mutula and van Brakel (2006), that is, the dimensions for digital divide in local governments in this paper, the item "internals of organizations" accounts for the highest weighting (28.1%), followed by "information" (21.9%).

Measurement Dimensions	Hierarchical Weighting (%)	Weighting Ranking
Internals of Organizations	28.1	1
Information	21.9	2
External Environment	19.8	3
Human Resources	19.0	4
ICT Infrastructure	11.2	5

Table 2. Relative Weightings of Five Dimensions

After deriving the relative weightings of the five dimensions, this paper further analyzes and explains the weightings of the respective measurements of each dimension. Table 3 shows that in the dimension "internals of organizations", the capabilities of using and managing information services are the key factors that result in the digital divide in local governments. It accounts for 22.6% of the hierarchical weighting.

Table 4 indicates the weightings of "information" as a dimension. The item "Whether information is useful" is highly important concerning the digital divide in local governments as it accounts for 17.4% of the weighting. In other words, the demands from the public determine whether they are not satisfied with the e-services provided by their local government. The e-services provided should cater to the needs of the public.

Dimension	Measurements	Hierarchical Weighting (%)	Overall Weighting (%)	Overall Weighting Ranking
Internals of Organizations	Capabilities of using and managing information services	22.6	5.0	1
	Participation of local organizations	18.3	4.0	2
	Organizational culture	17.4	3.8	3
	Education and training curricula	16.7	3.7	4
	Strategic planning in ICT	14.7	3.2	5
	Financing resources	10.2	2.2	6

Table 3. Weightings of Measurements for Internals of Organizations

Dimension	Measurements	Hierarchical Weighting (%)	Overall Weighting (%)	Overall Weighting Ranking
Information	Whether information is useful	17.4	3.3	1
	Information response speed	10.6	2.0	2
	E-services for the disabled	10.1	1.9	3

	Prevalence of the contents of e- services	10.2	1.9	4
	Development of e-communities	9.4	1.8	5
	Cost of using e-services	8.9	1.7	6
	Quality of information contents	8.8	1.7	7
	Friendliness and convertibility of data representations	6.9	1.3	8
	Variety of information contents	6.7	1.3	9
	Number of e-service users	5.1	1.0	10
	Consistency of local and central information	3.5	0.7	11
	Multilanguage services	2.3	0.4	12

Table 4. Weightings of Measurements for Information

Table 5 shows the weightings of individual measurements of "external environments" as a dimension. This paper finds that the item "opportunities to use technologies as required by job functions" accounts for the highest weighting of 15.2%. This indicates that this measurement has a strong influence on the digital divide in local governments. If a region is mainly engaged in forestry, agriculture, fishery, and animal farming, the residents have fewer opportunities to use technologies for their jobs compared with people who work in science parks. As a result, the performance of this measurement as a digital divide must be poorer. This measurement also indicates the influence of industrial mix on digital divide.

Dimension	Measurements	Hierarchical Weighting (%)	Overall Weighting (%)	Overall Weighting Ranking
External Environment	Opportunities to use technologies as required by job functions	15.2	4.3	1
	Participation from core ICT industry players	13.5	3.8	2
	Support of relevant social resources	12.0	3.4	3
	Promotion of e-services via advertising	12.0	3.4	4
	Sophistication of ICT usage environment and economic stability	11.4	3.2	5
	Government policy directions and willingness	11.3	3.2	6
	Complementary and cooperative opportunities for ICT services at local and central governments	11.1	3.1	7
	Users' ages	6.9	2.0	8
	Users' incomes	6.6	1.8	9

Table 5. Weightings of Measurements for External Environments

Table 6 shows that among the factors under the "human resources" dimension, the levels of "trust in ICT and ICT providers from users" and "trust in government" are highly important to the digital divide in local governments, as they account for 20.2% and 19.2% of the hierarchical weightings, respectively.

Dimension	Measurements	Hierarchical Weighting (%)	Overall Weighting (%)	Overall Weighting Ranking
Human Resources	Trust in ICT or ICT providers from users	20.2	4.0	1
	Trust in government	19.2	3.8	2
	Information literacy	17.8	3.5	3
	Participation of ICT professionals	13.5	2.7	4
	Users' knowledge	10.7	2.1	5
	Users' autonomy in the use of ICT technologies	9.8	1.9	6
	Users' experience in Internet technologies	8.7	1.7	7

Table 6. Weightings of Measurements for Human Resources

Table 7 lists the weightings of the measurements under the dimension of ICT infrastructures. The items "Information privacy" and "information security" are the most important measurements for the digital divide in local governments, as they account for 27.3% and 26.0% of the hierarchical weightings, respectively.

Dimension	Measurements	Hierarchical Weighting (%)	Overall Weighting (%)	Overall Weighting Ranking
ICT Infrastructures	Information privacy	27.3	3.1	1
	Information security	26.0	2.9	2
	Cost of system deployment, updates and maintenance	10.6	1.2	3
	Bandwidth and connection quality	11.1	1.2	4
	Connectivity of IT systems and architectures	8.7	1.0	5
	Hardware and software	6.1	0.7	6
	ICT scalability	5.0	0.6	7
	Multiple channels to access e-services	5.0	0.6	8

Table 7. Weightings of Measurements for ICT Infrastructures

CASE STUDIES OF DIGITAL DIVIDE IN GOVERNMENTS

By applying the Ground Theory, conducting experts' questionnaire survey and the AHP analysis, this paper constructs a digital divide evaluation model suitable for local governments. In order to validate the suitability of this measurement model, this paper uses the Chiayi County Government as a case study in its empirical research. The respondents of this questionnaire are public servants and users of e-services at the Chiayi County Government. A total of 32 valid questionnaires were recovered.

According to the scores shown in Appendix B, the total of digital divide in the Chiayi County Government is 70.920. In the dimension of "ICT infrastructures", the items "information security" and "information privacy" report the highest scores, possibly because the Chiayi County Government has deployed Information Safety Management System (ISMS). Meanwhile, the items "ICT scalability" and "Multiple channels to access e-services" report the lowest score. This is probably because the Chiayi County Government, having the largest number of machines in Taiwan, has been highly active in establishing the Digital Opportunity Center recently over the years. However, its establishment has not yet narrowed its digital divide.

Under the dimension "human resources", the items "trust in ICT or ICT providers from users", "trust in government", and "information literacy" rank as top three in the score chart. This shows that the "Log-on Campaigns for the Public" driven by the Chiayi County Government indeed has improved the information literacy of its residents. Also, various e-projects promoted by the government have made it more accessible to the public. Under this dimension, the item "users' experience in Internet technologies" reports the lowest score. This shows that despite the Log-on Campaigns for the Public, numerous people are still inexperienced users of the Internet.

Under the dimension "external environments", the items "users' ages" and "users' incomes" report the lowest score. This indicates that the majority of the public in the Chiayi County ranges from middle-aged to old-aged. This is in line with the data gathered through the interviews in this paper. The percentage of middle- to old-age residents in the Chiayi County is the second lowest in Taiwan, next only to Penghu. Meanwhile, probably owing to industrial structure, the average income of residents in the Chiayi County is lower than that of other counties and cities. Thus, the item "users' incomes" shows a low score.

Under the dimension "information", the item "Whether information is useful" receives the highest score, indicating that the services provided to the public, the web pages and channels for the public to file their reports and complaints, and the content of the websites are all highly useful information. The items "Number of e-service users", "consistency of local and central information", and "multi-language services" report lower scores, indicating that the number of e-service users in the Chiayi County is not that large. This paper learns from interviews that the contents provided by the Chiayi County usually come in later than other countries/cities, or only upon the demands from the central government. As a result, the information posted by the Chiayi County Government could not be possibly consistent with the information provided by the central government. Currently, the website of the Chiayi County Government provides three languages, namely, Chinese, Japanese, and English. The low score of "multi-language services" probably implies the demands for other languages.

Under the dimension “internals of organizations”, the item “capabilities of using and managing information services” has the highest score, indicating that the Chiayi County government is doing its job in the maintenance, updates, and disaster recovery of its administration and information management system. It is, indeed, monitoring and supervising the computer centers. Meanwhile, the Chiayi County government also keeps its anti-virus software constantly updated and the old machines replaced. The measurement “financing resources”, however, reports a low score. This paper has learned from interviews that the Chiayi County government relies on the competent authority for the budgetary planning of its digitalization projects.

CONCLUSIONS

After referring to the Ground Theory, utilizing the experts’ questionnaires and the AHP analysis, this paper is able to construct five dimensions and 42 measurements for the digital divide evaluation model. Unlike other evaluation mechanisms which only measure a single item, this model takes a comprehensive approach with the aim to better enable local governments to assess the pros and cons of their digitalization. This will benefit the development of digital plans which are currently ongoing or are already planned, and hence facilitate the obtaining of support from the competent authority and the application for budget. On the other hand, the digitalization of local governments also attracts manufacturers. Local governments could utilize the assessment model developed by this paper in improving and enhancing their overall digitalization foundation to be able to provide manufacturers a better investment environment and as a result, upgrade local industries and create job opportunities. Further, for all local government, this evaluation model can be regarded as benchmark to appraisal digital divide that can be referred by central government. Following the result from this model, central government can plan to push digitalization project on low-score local government for bridging the gap among the government. For academics, although there are many structures established that assess digital divide, few are catering to the needs of the local governments. While e-governments are now receiving more and more attention, the digital divide evaluation model constructed by this paper for local governments should serve as a reference for academics in the examination of the methods in narrowing down the digital divide in government levels.

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No.	Authors	No.	Authors
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2	Parker (2000)	14	Evansa and Yen (2005)
3	Lentz and Oden (2001)	15	Gupta and Jana (2003)
4	DiMaggio & Hargittai (2001)	16	Singh and Sahu (2007)
5	Weerasinghe (2004)	17	Yang and Paul (2003)
6	Hargittai (2002)	18	Rose (2004)
7	Kuk (2002)	19	Moreia (2003)
8	Guasch and Ugas (2007)	20	Roy (2006)
9	West (2002)	21	Huang (2006)
10	Parent, vandebeek, and Gemino (2005)	22	Jukic and Vintar (2006)
11	Nia and Ho (2005)	23	Leenes (2004)
12	McGregora and Holman (2004)		

Appendix A. Summary of related papers for grounded theory

Dimension	Measurements	Average Self-Assessment Scores (a)	Percentage translated from average self-assessment scores ((a)/5*100)	Overall Weighting (%)	Score	Ranking
ICT Infrastructure	Information privacy	3.875	77.500	3.1	2.403	1
	Information security	4.000	80.000	2.9	2.320	2
	Bandwidth and connection quality	3.938	78.750	1.2	0.945	3
	Cost of system deployment, updates and maintenance	3.906	78.125	1.2	0.938	4
	Connectivity of IT systems and architectures	3.781	75.625	1.0	0.756	5
	Hardware and software	3.906	78.125	0.7	0.547	6

	Multiple channels to access e-services	3.969	79.375	0.6	0.476	7
	ICT scalability	3.750	75.000	0.6	0.450	8
Human Resources	Trust in ICT or ICT providers from users	3.500	70.000	4.0	2.800	1
	Trust in government	3.625	72.500	3.8	2.755	2
	Information literacy	3.531	70.625	3.5	2.472	3
	Participation of ICT professionals	3.406	68.125	2.7	1.839	4
	Users' autonomy in the use of ICT technologies	3.719	74.375	1.9	1.413	5
	Users' knowledge	2.688	53.750	2.1	1.129	6
	Users' experience of Internet technologies	3.188	63.750	1.7	1.084	7
External Environment	Opportunities to use technologies as required by job functions	3.719	74.375	4.3	3.198	1
	Participation from core ICT industry players	3.250	65.000	3.8	2.470	2
	Complementary and cooperative opportunities for ICT services at local and central governments Complementary and cooperative opportunities for ICT services at local and central governments	3.844	76.875	3.1	2.383	3
	Promotion of e-services via advertising	3.375	67.500	3.4	2.295	4
	Support of relevant social resources	3.250	65.000	3.4	2.210	5
	Government policy directions and willingness	3.375	67.500	3.2	2.160	6
	Sophistication of ICT usage environment and economic stability	3.188	63.750	3.2	2.040	7
	Users' ages	2.219	44.375	2.0	0.888	8
	Users' incomes	2.344	46.875	1.8	0.844	9
Information	Whether information is useful	3.750	75.000	3.3	2.475	1
	Prevalence of the contents of e- services	3.844	76.875	1.9	1.461	2
	Information response speed	3.563	71.250	2.0	1.425	3
	Quality of information contents	3.906	78.125	1.7	1.328	4
	E-services for the disabled	3.438	68.750	1.9	1.306	5
	Development of e-communities	3.219	64.375	1.8	1.159	6
	Cost of using e-services	3.375	67.500	1.7	1.148	7
	Variety of information contents	3.969	79.375	1.3	1.032	8
	Friendliness and convertibility of data representations	3.875	77.500	1.3	1.008	9
	Number of e-service users	3.156	63.125	1.0	0.631	10
	Consistency of local and central information	3.344	66.875	0.7	0.468	11
	Multilanguage services	3.219	64.375	0.4	0.258	12
Internals of Organizations	capabilities of using and managing information services	3.938	78.750	5.0	3.938	1
	Education and training curricula	4.188	83.750	3.7	3.099	2
	Participation of local organizations	3.688	73.750	4.0	2.950	3
	Organizational culture	3.813	76.250	3.8	2.898	4
	Strategic planning in ICT	3.531	70.625	3.2	2.260	5
	Financing resources	2.875	57.500	2.2	1.265	6
Total Score		70.920				

Appendix B. Scores of Digital Divide in the Chiayi County Government